JUNE, 1931

ENTOMOLOGICAL NEWS

Vol. XLII No. 6

HENRY SKINNER
1861-1926

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PHILADELPHIA, PA.
THE ACADEMY OF NATURAL SCIENCES,
Logan Square

Entered at the Philadelphia, Pa., Post Office as Second Class Matter.
Acceptance for mailing at the special rate of postage prescribed for in Section 1
Act of October 3, 1917, authorized January 15, 1921.

ENTOMOLOGICAL NEWS

published monthly, excepting August and September, by The American Entomological Society.

Philip P. Calvert, Ph.D., Editor; E. T. Cresson, Jr., R. G. Schmieder, Ph.D., Associate Editors.

Advisory Committee: Philip Laurent, J. A. G Rehn, Chas. Liebeck, J. Chester Bradley, Ph.D., Frank Morton Jones, John C. Lutz, Max Kisliuk, Jr., Wm. W. Chapman.

The subscription price per year of ten (10) numbers is as follows:

United States and possessions, Central and South America	$3.00
Canada	3.15
Foreign	3.25

Single copies 35 cents.

ADVERTISING RATES: Full width of page. Payments in advance.

One issue, 1 in.,	$ 1.20,	2 in.,	$ 2.40,	half page,	$ 4.00,	full page,	$ 7.00
Ten issues "	11.00,	"	20.00,	"	35.00,	"	60.00

SUBSCRIPTIONS. All remittances and communications regarding subscriptions, non-receipt of the NEWS or of reprints, and requests for sample copies, should be addressed to

ENTOMOLOGICAL NEWS, 1900 Race Street, PHILADELPHIA, PA.

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ENTOMOLOGICAL NEWS

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Professor John Henry Comstock.

JOHN HENRY COMSTOCK, 82, professor emeritus of entomology, Cornell University, died at 3:30 o'clock of the morning of March 20, 1931, at his home, 123 Roberts Place, Ithaca, New York, where he had been confined since 1927 by illness following a cerebral hemorrhage.

John Henry Comstock was the son of Ebenezer and Susan Allen Comstock. Born in Janesville, Wis., one of the outposts of the march westward, on February 24, 1849, a year after Wisconsin had been admitted to the Union, John Henry Comstock was an infant when his father was lured to California by the story of the discovery of gold and died of cholera en route. The boy's mother, who belonged to the family of Ethan Allen, returned with him to her native state, New York, and made an heroic struggle to support him, but she was finally forced to place her son in a public home. He was later taken by a family which, though not affluent, could at least give him enough to eat, and, as the people about him were for the most part sailors, he, too, became at 16 a sailor on the Great Lakes.

Although he received a certain amount of formal schooling, he was largely self-educated, and when he found in a bookstore a copy of Harris' "Insects Injurious to Vegetation," he added to his love of botany an interest in entomology, for he bought the book with money borrowed from his shipmates, and so inaugurated his library.

At 20 he was ready to enter college, and decided on the new institution, Cornell University, on the shores of Cayuga Lake, where he could work his way. He also found inspiring teachers and kindred spirits among the students.

John Henry Comstock was one of the creators of Cornell University, for in a very real sense his life has been built into that of the institution. At Cornell he was among the early

students, entering in 1869, the year after the University opened, becoming an instructor while still an undergraduate, and graduating with the degree of B.S. in 1874. At Cornell he taught for more than 40 years, and at Cornell he literally created the Department of Entomology which has grown to be one of the best in the country.

A colleague, Prof. S. H. Gage, has stated in an historical sketch of Professor Comstock that he gave personal instruction to more than 5,000 students from the year 1872, when he began as an undergraduate to give lectures in entomology, to the time of his retirement in 1914. It is safe to add that practically every one of these found his or her way at some time to the Comstock home and enjoyed its hospitality. The total includes at least 50 of his advanced students who have become state or national entomologists or professors of entomology or zoology in various colleges and experiment stations. Among these is Dr. Leland O. Howard, chief of the Bureau of Entomology of the United States Department of Agriculture.

When Professor Comstock began his work at Cornell he constituted the Department of Entomology. He was lecturer, instructor in the field, and assistant in the laboratory. Room and facilities were also meager. When he retired 41 years later the department had a magnificent material equipment and a staff of 31, including five professors.

The Comstock Memorial Library was given to Cornell at the time of his retirement, by his former students, who presented to him a fund of $2,500 which was in turn passed on by him to the University. On that occasion the chimes were played in his honor, for he was chime master in 1872-73 and had arranged several of the scores played, at the request of the donor of the bells, Jennie McGraw. This is only one indication of the multitude of small as well as great services which John Henry Comstock has performed for Cornell. It is also said that he helped to build with his own hands one of the original University buildings, that in which he later gave his first lectures.

Professor Gage tells the story of how the Department of

Entomology came into being. In the Spring of 1872, 13 of Professor Comstock's college mates petitioned the faculty to permit him to give them a course in entomology that term. The request was granted, and from that day on the work in entomology at Cornell has followed the plan which he instituted. Graduated in 1874 from Cornell University with the degree of Bachelor of Science, he studied as a graduate student in 1874-5 at Harvard and at the University of Leipzig in 1888-9.

In 1878 he married Anna Botsford, then his fellow-student at Cornell, whom he outlived by but six months after more than 50 years of work in common.

Professor Comstock taught at Cornell till 1879 when he became entomologist for the federal government at Washington. Returning in 1881 to Cornell, he served here as professor of entomology and invertebrate zoology until 1914 when he became professor emeritus.

In 1877 he was lecturer on zoology at Vassar College and from 1891 to 1900 non-resident professor of entolomology at Leland Stanford University.

In 1891 President David Starr Jordan of Leland Stanford University asked Professor Comstock to organize a Department of Entomology at Stanford, similar to that at Cornell and he undertook the work in his vacations from 1891 to 1900. President Jordan had been one of the students who petitioned the Cornell faculty in 1872 for that beginning course in entomology.

Professor Comstock's books are all widely known and much used. Many of them are illustrated with beautiful wood cuts made by his wife, Anna Botsford Comstock, herself for many years a professor of nature study at Cornell. Their home in Ithaca and the enthusiastic devotion with which they worked and taught have proved an inspiration to many generations of Cornell students.—CATHERINE FINCH in Ithaca *Journal-News* of March 20, 1931.

Prof. Comstock, at the time of his death, was one of two Americans holding honorary fellowships in the Entomological

Society of London, was a member of the entomological societies of France and of Belgium, honorary fellow of the Entomological Societies of America and of Ontario, and of the Fourth International Entomological Congress, corresponding member of the Academy of Natural Sciences of Philadelphia and of the American Entomological Society, member of the American Societies of Naturalists and of Zoologists, of the American Philosophical Society, of the California Academy of Sciences.

Readers of the NEWS will find in its volumes notices of some of his more important writings as they appeared; thus vol. iv, no. 10, Dec., 1893, pp. 334-5, contains a notice of his *Evolution and Taxonomy;* the first edition of his and Mrs. Comstock's *Manual for the Study of Insects* is reviewed in vol. vi, p. 163, May, 1895, the nineteenth edition in xli, p. 273, Oct., 1930; *The Elements of Insect Anatomy,* with V. L. Kellogg (vi, p. 268, Oct., 1895), 3rd edition (xiii, p. 21, Jan., '02); *Insect Life* (viii, p. 226, Nov., 1897); *The Wings of Insects,* with J. G. Needham (ix, p. 75, etc., Mar. *et al.,* 1898; *The Skeleton of the Head of Insects,* with C. Kochi (xiii, p. 55, Feb., '02); *Spider Book* (xxiv, p. 35, Jan., 1913); *The Wings of Insects* (xxx, p. 148, May, 1919); *An Introduction to Entomology,* Part I (xxxi, p. 208, July, 1920); the same, first complete edition, Parts I & II (xxxvi, p. 94, Mar., 1925). Another of his books, written jointly with Mrs. Comstock, was *How to Know the Butterflies* (1904).

Mr. Phil Rau writes to the Editor: "I am enclosing an editorial on Dr. Comstock, clipped from the St. Louis *Post Dispatch* of March 28. Since it is very seldom that a great daily gives editorial space to an entomologist, I thought perhaps you would like to reproduce the article in the NEWS." This editorial follows:

THE AMERICAN FABRE.

Not every American boy knew of John Henry Comstock, but he led thousands of them in one of the most fascinating branches of nature study. For where is there a boy who has not sat entranced watching a yellow-bodied spider build a web,

or darted in the sun from hollyhock to peony after spangled-winged butterflies, or chased lightning bugs across the lawn on summer evenings, or spread out under a tree to watch life at an ant hill, the goings out and the comings in and the polite to-do of social amenities in that absorbing world? Thus John Henry Comstock was related to all boydom. He spent most of his 82 years finding out about insects. Entomologists today look back on his pioneering work at Cornell University as the beginning of insect study, both scientific and popular, in this country. His wife was the late Anna Botsford Comstock, natural history artist and wood engraver, with whom he did much of his work. Together they led many an American of a machine age under the open sky and into a fuller appreciation of the world outside the door.

(A biographical notice of Mrs. Comstock was published in the NEWS for October, 1930, pp. 277-279, and portraits of her and her husband in the issue for April, 1930, Plate X.).

On Some Northern Lepidoptera Rhopalocera.

Dr. Samuel C. Palmer, of Swarthmore College, has given us a small series of Lepidopterous insects for identification, which, he captured in Baffinland and Labrador while he was botanist on the Bowdoin-Baffinland Expedition of 1929. A short account of the localities and conditions under which they were collected was published by Mr. James A. G. Rehn in the February NEWS for 1931, page 33.

The following were caught on the south shore of Frobisher Bay, Baffinland, from August 19th to August 24, 1930:

Brenthis improba Butler.. 1♂
Brenthis butleri Edwards.. 2♂♂ 1♀
Brenthis polaris Boisduval. 1♀
Brenthis tarquinius Curtis. 2♂♂
Plebeius aquilo Boisduval.. 2♂♂

The following were caught August 27th at Cape Mugford, Labrador:

Colias pelidne Boisduval..... 2♂♂
Colias nastes Boisduval ..... 1♀
Eresia rossi Curtis ..... 1♀
Oeneis taygete Hubner 3♂♂, 1♀, 1♂ aberrant
Oeneis semidea var. *arctica* Gibson ..... 1♂
Oeneis norna Thunberg ..... 1♂ aberrant
Anarta richardsoni Curtis ... 1♀

I believe the records from these unusual localities will be of interest to Lepidopterists. I wish to acknowledge the assistance of my good friend, Dr. W. J. Holland, in identifying the species.—ROSWELL C. WILLIAMS, JR., Philadelphia, Penna.

The Predatory Enemies of Elateridae (Coleoptera).

By C. A. THOMAS, Pennsylvania State College.

(Continued from page 140.)

DIPTERA (Addition).

Bromley (1914) listed adults of *Erax aestuans* L. feeding on a *Melanotus* sp. adult, *Promachus bastardi* Macq., eating a *Limonius* sp. adult, and *P. fitchii* O. S. eating *Elater* and *Melanotus* adults.

VERTEBRATE PREDATORS.

An examination of the food of various vertebrates indicates that they are more effective wireworm enemies than the invertebrates.

BATRACHIA.

Toads and frogs are practically omnivorous with regard to their animal food, but they are of some value in the natural control of elaterids, as is shown by the following data; according to Kirkland (1904), five percent of the food in one hundred and forty-nine toad stomachs examined between April and October, consisted of wireworm beetles and their allies; the U. S. Biological Survey [4] furnished the following data with regard to the elaterid food of six species of North American toads:

Species	No. of Stomachs Examined	Elaterids Adults	Found Larvae	Species of Elaterids Represented
Bufo americanus LeC.	533	185	12	40 (Approx.) [5]
B. boreas B. & G.	370	115	16	31 "
B. woodhousei Gir.	299	99	3	26 "
B. fowleri Putnam	278	83	3	21 "
B. marinus L.	218	46	2	11 "

This table shows that toads do considerable feeding upon the adult Elaterids, but that the larvae are uncommon in their diet. This is to be expected, since the larvae seldom come above ground voluntarily, and those which were eaten were probably picked up in plow furrows by the toads. Of the species of adults eaten, those of the genera Melanotus and

[4] The writer is indebted to the U. S. Biological Survey for use of data on the elaterid food of toads and birds.

[5] Approximate, because some fragments could not be identified to species.

Monocrepidius were most frequently represented. Local abundance of species doubtless influences the frequency of occurrence in the stomachs.

Frogs also feed upon click beetles to some extent. Hyslop (1916) examined the stomachs of a large series of field or leopard frogs, *Rana pipiens* Schr., collected on the shores of Lake Oneida in New York State. He concluded that they were of enormous value in destroying the adults of the wheat wireworm, *Agriotes mancus* Say, when these beetles were ovipositing in the grasslands adjacent to the lake. Frost (1924) listed five elaterid species taken from stomachs of various frog species in New York and Pennsylvania. Of these, *A. mancus* was frequently eaten. Neither Hyslop nor Frost mention finding elaterid larvae in any of these stomachs. Haber (1926) did not note Elaterids or their larvae in the stomach contents of a series of the tree frog, *Hyla cinera* Schn.

Surface (1913) noted Elaterids in the food of the following: Toads: *Bufo americana* LeC. Frogs: *Hyla versicolor* LeC.; *Rana pipiens* Schr.; *R. palustris* LeC.; *R. sylvatica* Lec.; and *R. clamitans* Latr. Salamanders: *Plethodon cinereus* (Green); *P. glutinosus* (Green); *Spelerpes ruber* (Daudin); *Diemictylus viridescens* (Raf.).

Reptilia.

Hyslop (1915) stated that a small lizard, *Phrynosoma d. douglasii* (Bell), eats large numbers of adult Elaterids in the desert regions of the Northwest. In Washington State, as high as ninety percent of the food has been found to be click beetles, so that they are probably a large part of the natural food of these lizards at certain seasons. Surface (1907) noted Elaterids as part of the food of the common swift, *Sceloporus undulatus* Latr. He does not mention them among the food items of snakes and turtles, although they doubtless would be eaten by snakes if available.

Birds.

Birds are, no doubt, of first importance among the natural enemies of wireworms. A large number of species feed upon the various elaterid stages, the amount of feeding depending

upon the season, the abundance of the wireworms and other factors.

Birds feed on wireworms mostly in the spring and early summer, when the click beetles and wireworms are most active, when plowing is in progress, and when the young birds consume large quantities of insects. By late summer, when the young birds are able to forage for themselves, the wireworms are so deep in the soil that they are not available unless deep cultivation happens to turn them up to the soil surface.

Among the many writers who have noted the value of birds as destroyers of wireworms and click beetles are Curtis (1845), Wilcox (1892), Forbes (1882, 1892, 1903), Judd (1901), Beal (1907, 1912a, b, 1917), McAtee (1908), Newstead (1908), Collinge, Gabrielson (1912), French (1913), Hyslop (1915), Kalmbach (1914, 1928), Gibson (1916), Ford (1917), Orton and Chittenden (1917), Gray and Wheldon, Rymer-Roberts (1919), Baudys (1922), Hawkins, Vietinghoff-Riesch (1928). Hawkins stated that while birds do much good in controlling insects in general, and may be valuable in wireworm control, it is not likely that they would become numerous enough to clean up severe infestations of these pests.

Hyslop (1915) listed ninety bird species, found to have fed upon wireworms and click beetles by the U. S. Biological Survey. The 1927 records of the Survey show that the remains of these insects, chiefly of the beetles, have been found in the stomachs of approximately 224 species of birds in North America. Analysis of the data shows that these insects have been recovered most frequently from the stomachs of the following birds: crow, *Corvus brachyrhynchos* Brehm, which ate 25 different species of Elaterids, representing a large number of individuals; starling, *Sturnus vulgaris* L., 23 species; nighthawk, *Chordeiles virginianus* Gmel., 20 species; robin, *Planesticus migratorius* L., 20 species; red-eyed vireo *Vireosylva olivacea* L., 18 species; meadowlark, *Sturnella magna* L., 15 species; magpie, *Pica pica* L., blue jay, *Cyanocitta cristata* L., and upland plover, *Bartramia longicauda* Bechst., each 8 species, and the kingbird, *Tyrannus tyrannus* L., 7 species. The

catbird, bluebird, great-crested flycatcher, house wren, phoebe, killdeer, bobwhite, gulls, English pheasant and a number of other species have been found to contain numerous remains of these insects, while the great majority of the bird species had eaten only occasional specimens and are probably not of much value in the control of these insects. The occurrence of such remains in the stomachs of any species depends to a large extent upon the abundance of the Elaterids as compared with other available bird food, and upon the occurrence or abundance of that bird species in that certain locality.

A study of reports on the value of such birds as crows, rooks, gulls, pheasants, starlings, etc., as destroyers of all stages of Elaterids, provides much interesting information which should be of some value to those who attempt to balance the good with the supposedly bad food habits of these birds. The food of crows in the United States, and of the rook, *Corvus frugilegus*, in Europe, has been quite thoroughly investigated, and wireworms and click beetles have been found as common articles of the diet of these much maligned birds.

According to Curtis (1845), rooks fearlessly follow the plow and consume immense quantities of these insects, and their crops have been found full of them. Leigh (1914) stated that wireworms form about nine percent of the food of the rook. Newstead (1908), Vostrikov (1916), Walton (1917), Ford (1917), Gray and Wheldon (1919), and Masaitas (1927) also noted the value of this bird. Ford said that the jackdaw also feeds on these insects.

Concerning the American crow, Fitch (1866) said that their favorite food and principal sustenance consisted of wireworms and click beetles. While this is rather a strong statement, there is little doubt that these birds do eat a large number of such insects. Kalmbach (1920) recorded 72 wireworms in the stomach of a crow collected in April. Others who noted the value of crows against wireworms were Webster (1893), Wilcox (1892), Graf (1914), Hawkins (1928).

The European starling, which is now so firmly established in the United States, also devours many wireworms and other

soil larvae in addition to the adult beetles. It has often been observed following in the plow furrow, picking up wireworms, white grubs and other pests. Data from the Biological Survey indicate that its greatest consumption of wireworms occurs during May, with much less feeding on them during the rest of the year. (See Forbush, 1916, and Kalmbach, 1928.)

Although gulls are usually regarded as more or less marine birds, many of them also feed inland on cultivated areas. They frequently follow plows in the same manner as poultry and thus pick up many soil insects. Graf (1914) found many individuals of a species of *Larus* feeding in new plow furrows in fields infested with *Limonius californicus* Mannh. Florence (1915) referred to the quantities of wireworms consumed by various species of gulls at Aberdeen, Scotland. Newstead (1908) stated that in one instance forty-five *Agriotes* larvae were found in the crop of a black-headed gull, *Larus ridibundus,* in England, while Berry (1917) counted thirty-one wireworms in the crops of twenty-two nestlings of the same species. Ford (1917) also commented on the beneficial effect of gulls against wireworms.

English or ring-necked pheasants, *Phasianus torquatus,* have been accused of causing much damage to sprouting corn and some other crops, but there is little doubt that they also eat a large number of insects,[6] Curtis (1845) said that pheasants and partridges destroy many wireworms in turnip and other fields. Berry (1917) noted that the crop of one pheasant killed in marshy ground contained nearly two hundred wireworms, while according to Gunther (1917) there are excellent reasons for believing that pheasants are a valuable remedial measure on land infested with wireworms. Estates on which they are preserved are practically free from those insects because the young birds are entirely insectivorous. Evershed and Warburton (1918), however, appear to have

[6] Recent data received through the courtesy of Mr. L. A. Luttringer Jr., of the Pennsylvania State Game Commission show the presence of elaterid remains in the stomachs of English pheasants collected in Pennsylvania.

found few wireworms in the crops of pheasants in England. Local conditions probably account for this difference.

Domestic fowls can do considerable good in fields by eating insects. Allowed to follow the plow they pick up many wireworms which are turned up in the furrows, and also eat elaterid adults in fields not too far removed from the poultry house, The use of poultry for this purpose was advocated by Curtis (1845), O'Kane (1913), Theobald, Watson (1917), Schaffnit (1919), Rymer-Roberts (1919), Allwood (1920), Roebuck (1925), and others. Roebuck stated, however, that fowls are of value against wireworms only on arable land while plowing, disking, or cultivating is in actual progress, as the wireworms are too deep in the soil at other times. He advised keeping fowls during May and June on grassland adjoining arable land, and to let them range over other fields, especially clover, during early May.

Mammals.

Mammals in general are not important enemies of Elateridae, but moles and domestic swine may, under certain conditions, have some value in this respect. Moles have long been known to feed on wireworms, white grubs and other soil insects, and many writers are of the opinion that they are very valuable in the natural control of wireworms. According to Curtis (1845), Le Keux believed that moles would probably prove the best protection against wireworms and that since moles have become scarce through killing off, wireworms have greatly increased. Kirby and Spence (1846) were also impressed by the large quantities of wireworms devoured by moles, while White (1914) stated that wireworms were found in forty-one of one hundred mole stomachs collected at Anglesey, England, in December and January. One hundred and thirty-four wireworms were eaten by these forty-one moles, and one stomach contained forty larvae. Ford (1917) asserted that moles prey on *Agriotes obscurus* L. larvae in England, and that wireworms form a fairly constant constituent of the food of the common mole, *Talpa europaea*. According to Sachtleben (1925), wireworms and cockchafer larvae comprised the

greater part of the insect food of one hundred and forty moles that he examined in Russia. Sokanovskii (1926) listed the Elaterids found in mole stomachs in West Russian forests. However, Scheffer (1910) found wireworms in only two mole stomachs of one hundred collected in Kansas, and Adams (1920) gave no reference to these larvae as part of the food of *T. europaea* in England. As with the pheasants, this scarcity of wireworms in these stomachs is probably due to local conditions of wireworm scarcity in the field.

Domestic swine eat wireworms along with white grubs and other soil insects when they root out grass roots in sod fields. Williamson (1916) stated that hogs in a field before plowing destroy many of these pests and will soon clear them from the soil. Their exact value against wireworms has apparently never been determined, although much has been written on the use of hogs against white grubs.

SUMMARY.

A review of the literature on the natural control of the Elateridae, or click beetles, and their larvae, the wireworms, indicates that the predatory enemies exert considerably more control than is caused by their parasitic enemies.

Of the predators, birds, both wild and domesticated, are of the most value in this respect, with the predacious Carabidae, or ground beetles, probably second in importance. Toads and frogs, moles, and certain dipterous larvae also have considerable value.

In spite of the apparent efficiency of these predators, however, they are never more than partly effective in controlling an outbreak of these pests, and the aid they render should always be supplemented by such artificial control measures as are known to have the most value under the conditions at hand. The ultimate effect of such artificial controls upon the parasites and predators as well as upon the wireworms should always be considered.

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Prof. T. D. A. Cockerell to go to Africa.

In June my wife and I sail for England, and thence early in July, accompanied by Miss Alice Mackie, for Lobito Bay, West Coast of Africa; thence by rail to the Katanga country, then to Lake Tanganyika, then south via Rhodesia to the Cape; back to England by sea, and reach Colorado about Christmas. —T. D. A. COCKERELL.

Descriptions of New Genera and Species of the Dipterous Family Ephydridae. Paper X.*

By Ezra T. Cresson, Jr.

Ochthera canescens new species

Black; palpi, halteres, bases of fore and middle tibiae, and tarsi, yellow. Wings immaculate, hyaline, with pale veins. Similar to *mantis* but the frontal orbits opaque, ocherous. Mesonotum faintly bronzed, overcast with gray which becomes white laterally, on the pleura and metanotum. Abdomen overcast with gray becoming more dense laterally.

Structurally similar to *mantis*. Ocellar bristles distinct, much appressed. Mesonotum and scutellum subgranulose. Fore tibial spur as long as the basitarsus, the latter in the male with a well developed apical flexor, spine-like, conical spur, more or less obscured by long bristly hairs; middle femora of male with two flexor series of short bristles, the hind basitarsus with curved flexor hairs. Length, 5 mm.

Type.—Male; Polisha, Formosa, March, 1908, (Sauter), [A.N.S.P., No. 6485]. *Paratypes*.—1 ♂, 1 ♀; Anping, Formosa, April, 1912, (Sauter), [Hungary Nat. Mus.].

Ochthera loreta new species

Black; palpi, base of fore and middle tarsi, second to fourth segments of hind tarsi, tawny. Halteres pale yellow. Wings hyaline with pale veins. Of general aeneous to metallic silvery color; mesonotum with three cuperous stripes; face granulose, brassy, densely silvery pubescent, leaving the usual sculptured quadrate spots or bars, bare. Abdomen cinereous with broad poorly defined median brown stripes, narrowly extending laterally along the posterior margins of the segments.

Structurally similar to *exculpta*, but the anterior ocellus not noticeably large; face roundly convex, not conical; tormae broader than long; lateral margins of abdomen of male rounded, not angularly turned.

Type.—Male; Loreta, Baja California, May 19, 1921, (E. P. VanDuzee), [California Acad. Sci.]. *Paratype*.—1 ♂; topotypical. 1 ♂; Tampico, Mexico, December 22, 1908, [Illinois Natural History Survey].

* Paper VIII. See Ent. News, XLI, p. 76, (1930).
Paper IX. See Ent. News, XLII, p. 104, (1931).

Ochthera baia new species

Black; fore tarsi except apically, and base of middle tarsi, tawny; halteres pale yellow. Wings brownish with brown veins. Frontal plate shining, the broad orbits velvety-black; face uniformally golden pubescent; cheeks and lower occiput cinereous; mesonotum granulose, brassy, with three cupreous stripes; scutellum similar, with brassy tinge. Abdomen rather shining, sparingly brown pruinose; the laterally turned down lateral lobes densely cinereous; pleura and femora, cinereous.

Structurally and in size similar to *loreta*.

Type. — Male; Mulege, BAJA CALIFORNIA, May 14, 1921. (E. P. VanDuzee), [California Acad. Sci. Collection.]. *Paratypes*.—1 ♂, 2 ♀; topotypical.

Ochthera wrighti new species

Black; antennae especially third segment, palpi and halteres, fore and middle tibiae and their tarsi except apex of latter, extremities of hind tibiae, more or less of intermediate segment of their tarsi, pale yellow to tawny. Wings clear.

Structurally similar to *regalis*. Width of frons about eight times the distance between anterior ocellus and anterior margin. Face at narrowest portion transversely subcarinate, lower portion not longer than the upper; the lower transverse carina distinctly above epistoma, below this the face is retreating. Fore basitarsus of male as well as the following segments are more dilated than in *regalis;* the former with a similar strong flexor tooth, partially obscured by the surrounding pile and pubescence. Length, 3.5 mm.

Very similar to *regalis* especially in color, but averages larger; frons shorter and broader as is also the lower portion of the face; the latter with the transverse carina more prominent; aristal hairs somewhat flattened on basal three-fourths, especially in the male.

Type.—Male; CUBA, (Ch. Wright). [Museum of Comp. Zool., Coll.]. *Paratypes*.—2 ♂, 7 ♀; topotypical.

Ochthera painteri new species

Very similar to *wrighti*, differing as follows: Frons longer, but not so noticeably as in *regalis;* more shining, with the lateral opaque orbital areas velvety-black above and sharply defined. Second antennal segment black; third, pale tawny with

the aristal hairs normal, long and curving. Face longer, more pruinose in the male, less concaved, with scarcely any transverse carina below, its position being very near the epistomal margin. Palpi black.

Type.—Male; Puerto Castilla, HONDURAS. (R. H. Painter; April 18, 1924), [A.N.S.P., No. 6486]. *Paratypes.*—2 ♂, 2 ♀; topotypical, April 4, 20, 23, 1924.

STENOCHTHERA ANGUSTIFACIES Hendel
1930. *Stenochthera angustifacies* Hendel, Konowia, ix, p. 132.

This is the genotype of *Stenochthera* Hendel and was originally described from Bolivia. I have seen specimens from San Bernardino, PARAGUAY, (Fiebrig), [Nat. Hist. Mus., Vienna; 13]; Trinidad Rio, PANAMA, (Busck; March 29), [U.S.N.M.; 1]; Higuito, San Mateo, COSTA RICA, (Schild), [U.S.N.M.; 1].

STENOCHTHERA REGALIS (Williston) n. comb.
1897. *Ochthera regalis* Williston, Kans. Univ. Quart., vi, p. 6.
1930. *Stenochthera caeruleovittata* Hendel, Konowia, ix, p. 133, n. syn.

Although Hendel, in his reference above cited, states that *Ochthera regalis* Williston belongs to his new genus *Stenochthera,* he does not complete the new combination.

My series of *regalis,* including a female from Dr. Williston's collection and agreeing with his description, are certainly conspecific with Hendel's *caeruleovittata,* at least they agree with Hendel's description. I do not know what Hendel considers *regalis.*

STENOCHTHERA TRIORNATA (Cresson) n. comb.
1926. *Ochthera triornata* Cresson, Trans. Am. Ent. Soc., lii, p. 255.

Hendel states that this is also a member of his new genus, but does not complete the new combination.

This species was originally described from PARAGUAY. I have also seen it from San Sebastiao, Sao Paulo, BRAZIL, (Barbiellini), [1]; and there is a specimen in the Natural History Museum of Vienna without data, bearing label "Coll. Winth".

More About Bites by Aphis Lions (Neur.: Chrysopidae).

In the March, 1931, issue of the ENTOMOLOGICAL NEWS, P. B. Barringer calls attention to the fact that larvae of Chrysopidae sometimes bite human beings. Dr. Barringer wishes to know whether or not this has been experienced elsewhere.

The writer finds that in South Dakota it is a common experience for individuals working out-of-doors to be bitten several times per year by *Chrysopa* larvae. While conducting his experimental field work and while on collecting trips, the writer has frequently been bitten several times per day by aphis lions. This has taken place regardless of the amount of rainfall that occurred during the season or year. The writer is certain that in South Dakota there is no direct correlation between lack of precipitation and the frequency of attacks upon human beings by Chrysopa larvae. Undoubtedly, these attacks occur more frequently when the larvae are abundant, but this, in the opinion of the writer, is because more Chrysopa larvae are dislodged from the aphid infested plants when the aphis lions are more abundant than when they are scarce.

The matter of reaching a human body is entirely a matter of chance. In the spring and early summer of 1930, South Dakota experienced one of the worst aphid outbreaks that it ever had. The natural enemies of the aphids, including aphis lions, gradually increased in abundance, and by the middle of summer had reduced the plant lice to a negligible quantity. But even at the time when the aphids were most abundant, aphis lions attacked man when they happened to find themselves upon his body.

The after-effects upon man of the bites of an aphis lion have always been negligible in the experience of the writer, and have never been so severe as those described by Dr. Barringer. H. C. SEVERIN, South Dakota State College.

To Authors of Papers Published in the News.

Authors who desire the galley-proofs of their papers, which have been published in the NEWS in recent years, may obtain the same on application, within the next two months, to the Editor, Zoological Laby., University of Penna., Philadelphia, Penna., and remitting postage for the same. Specify the number, or numbers, in which the article(s) appeared.

List of the Titles of Periodicals and Serials Referred to by Numbers in Entomological Literature in Entomological News.

1. Transactions of The American Entomological Society. Philadelphia.
2. Entomologische Blätter, red. v. H. Eckstein etc. Berlin.
3. Annals of the Carnegie Museum. Pittsburgh, Pa.
4. Canadian Entomologist. London, Canada.
5. Pysche, A Journal of Entomology. Boston, Mass.
6. Journal of the New York Entomological Society. New York.
7. Annals of the Entomological Society of America. Columbus, Ohio.
8. Entomologists' Monthly Magazine. London.
9. The Entomologist. London.
10. Proceedings of the Ent. Soc. of Washington. Washington, D. C.
11. Deutsche entomologische Zeitschrift. Berlin.
12. Journal of Economic Entomology, Geneva, N. Y.
13. Journal of Entomology and Zoology. Claremont, Cal.
14. Entomologische Zeitschrift. Frankfurt a. M., Germany.
15. Natural History, American Museum of Natural History. New York.
16. American Journal of Science. New Haven, Conn.
17. Entomologische Rundschau. Stuttgart, Germany.
18. Internationale entomologische Zeitschrift. Guben, Germany.
19. Bulletin of the Brooklyn Entomological Society. Brooklyn, N. Y.
20. Societas entomologica. Stuttgart, Germany.
21. The Entomologists' Record and Journal of Variation. London.
22. Bulletin of Entomological Research. London.
23. Bollettino del Laboratorio di Zoologia generale e agraria della R. Scuola superiore d'Agricultura in Portici. Italy.
24. Annales de la société entomologique de France. Paris.
25. Bulletin de la société entomologique de France. Paris.
26. Entomologischer Anzeiger, hersg. Adolf Hoffmann. Wien, Austria.
27. Bolletino della Società Entomologica. Genova, Italy.
28. Ent. Tidskrift utgifen af Ent. Föreningen i Stockholm. Sweden.
29. Annual Report of the Ent. Society of Ontario. Toronto, Canada.
30. The Maine Naturalist. Thornaston, Maine.
31. Nature. London.
32. Boletim do Museu Nacional do Rio de Janiero. Brazil.
33. Bull. et Annales de la Société entomologique de Belgique. Bruxelles.
34. Zoologischer Anzeiger, hrsg. v. E. Korschelt. Leipzig.
35. The Annals of Applied Biology. Cambridge, England.
36. Transactions of the Entomological Society of London. England.
37. Proceedings of the Hawaiian Entomological Society. Honolulu.
38. Bull. of the Southern California Academy of Sciences. Los Angeles.
39. The Florida Entomologist. Gainesville, Fla.
40. American Museum Novitates. New York.
41. Mitteilungen der schweiz. ent. Gesellschaft. Schaffhausen, Switzerland.
42. The Journal of Experimental Zoology. Philadelphia.
43. Ohio Journal of Sciences. Columbus, Ohio.
44. Revista chileña de historia natural. Valparaiso, Chile.
45. Zeitschrift für wissenschaftliche Insektenbiologie. Berlin.
46. Zeitschrift für Morphologie und Ökologie der Tiere. Berlin.
47. Journal of Agricultural Research. Washington, D. C.
48. Wiener entomologische Zeitung. Wien, Austria.
49. Entomologische Mitteilungen. Berlin.
50. Proceedings of the U. S. National Museum. Washington, D. C.
51. Notulae entomologicae, ed. Soc. ent. helsingfors. Helsingfors, Finland.
52. Archiv für Naturgeschichte, hrsg. v. E. Strand. Berlin.

53. Quarterly Journal of Microscopical Science. London.
54. Annales de Parasitologie Humaine et Compareé. Paris.
55. Pan-Pacific Entomologist. San Francisco, Cal.
56. "Konowia". Zeit. für systematische Insektenkunde. Wien, Austria.
57. La Feuille des Naturalistes. Paris.
58. Entomologische Berichten. Nederlandsche ent. Ver. Amsterdam.
59. Encyclopédie entomologique, ed. P. Lechevalier. Paris.
60. Stettiner entomologische Zeitung. Stettin, Germany.
61. Proceedings of the California Academy of Sciences. San Francisco.
62. Bulletin of the American Museum of Natural History. New York.
63. Deutsche entomologische Zeitschrift "Iris". Berlin.
64. Zeitschrift des österr. entomologen-Vereines. Wien.
65. Zeitschrift für angewandte Entomologie, hrsg. K. Escherich. Berlin.
66. Report of the Proceedings of the Entomological Meeting. Pusa, India.
67. University of California Publications, Entomology. Berkeley, Cal.
68. Science. New York.
69. Comptes rendus hebdoma. des séances de l'Académie des sciences. Paris.
70. Entomologica Americana, Brooklyn Entomological Society. Brooklyn.
71. Novitates Zoologicae. Tring, England.
72. Revue russe d'Entomologie, Leningrad, USSR.
73. Quarterly Review of Biology. Baltimore, Maryland.
74. Sbornik entomolog. národniho musea v Praze. Prague, Czechoslavokia.
75. Annals and Magazine of Natural History. London.
76. The Scientific Monthly. New York.
77. Comptes rendus heb. des séances et mémo. de la soc. de biologie. Paris.
78. Bulletin Biologique de la France et de la Belgique. Paris.
79. Koleopterologische Rundschau. Wien.
80. Lepidopterologische Rundschau, hrsg. Adolf Hoffmann. Wien.
81. Folia myrmecol. et termitol. hrsg. Anton Krausse. Bernau bei Berlin.
82. Bulletin, Division of the Natural History Survey. Urbana, Illinois.
83. Arkiv för zoologie, K. Svenska Vetenskapsakademien i. Stockholm.
84. Ecology. Brooklyn.
85. Genetics. Princeton, New Jersey.
86. Zoologica, New York Zoological Society. New York.
87. Archiv für Entwicklungs mechanik der Organ., hrsg. v. Roux. Leipzig.
88. Die Naturwissenschaften, hrsg. A. Berliner. Berlin.
89. Zoologische Jahrbücher, hrsg. v. Spengel. Jena, Germany.
90. The American Naturalist. Garrison-on-Hudson, New York.
91. Journal of the Washington Academy of Sciences. Washington, D. C.
92. Biological Bulletin. Wood's Hole, Massachusetts.
93. Proceedings of the Zoological Society of London. England.
94. Zeitschrift für wissenschaftliche Zoologie. Leipzig.
95. Proceedings of the Biological Soc. of Washington, Washington, D. C.
96. La Cellule. Lierre, Belgium.
97. Biologisches Zentralblatt. Leipzig.
98. Le Naturaliste Canadien. Cap Rouge, Chicoutimi, Quebec.
99. Mélanges exotico-entomologiques, Par Maurice Pic. Moulins, France.
100. Bulletin Intern., Académie Polonaise des Sci. et des Lett. Cracovie, Poland.
101. Tijdschrift voor entomologie, Nederlandsche Entomol. Ver., Amsterdam.
102. Entomologiske Meddelelser, Entomologisk Forening, Copenhagen.
103. Journal of the Kansas Entomological Society, Lawrence, Kansas.
104. Revista de la Sociedad entomologica Argentina, Buenos Aires.

Entomological Literature

COMPILED BY LAURA S. MACKEY UNDER THE SUPERVISION OF E. T. CRESSON, JR.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted: but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species will be recorded.

The numbers **within brackets** [ ] refer to the journals, as numbered in the list of Periodicals and Serials published in the January and June numbers (or which may be secured from the publisher of Entomological News for 10c), in which the paper appeared. The number of, or annual **volume,** and in some cases the part, heft, &c. the latter **within ( )** follows; then the pagination follows the **colon :**

All continued papers, with few exceptions, are recorded only at their first installments.

•Papers containing new forms or names have an • preceding the author's name.

(S) Papers pertaining exclusively to neotropical species, and not so indicated in the title, have the symbol (S) at the end of the title of the paper.

For records of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington. Also Review of Applied Entomology, Series A, London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B.

☞*Note the change in the method of citing the bibliographical references, as explained above.*

Papers published in the Entomological News are not listed.

GENERAL.—Ainslie, G. G.—Obituary. By Larrimer & Wade. [12] 24: 567-569, ill. **Comstock, J. H.**—Obituary. By J. G. Needham. [68] 73: 409-410. **Comstock, J. H.**—Obituary. By G. W. H. [12] 24: 564-566, ill. **Cook, W. C.**—Notes on predicting the probable future distribution of introduced insects. [84] 12: 245-247. **de Joannis, J.**—Les règles internationales de nomenclature zoologique. [L'Amateur Papillons] 5: 152-160, 193-201. **Leech, H. B.**—Coleoptera by "smoking" stumps. [19] 26: 12. **Mathews, F. S.**—Field book of American wild flowers. Being a short description of their character and habits, a concise definition of their colors, and incidental references to the insects which assist in their fertilization. New York. 558 pp., ill. **Metcalf, C. L.**—Insects that bite man. [Trans. Illinois State Acad. Sci.] 23: 261-272. **Patton, W. S.**—Insects, ticks, mites and venomous animals of medical and veterinary importance. II. Public Health. 740 pp., ill. **Petersen, W.**—Nahrung und genitypus. [46] 20: 679-690. **Stiles & Nolan.**—Key catalogue of parasites reported for Chiroptera (Bats) with their possible public health importance. [U. S. Nat. Health Bull.] 155: 603-742. **Tillyard, R. J.**—The evolution of the class insecta. [Rep. 20th Meeting Australian & New Zealand Assoc. Adv. Sci.] 20: 193-241, ill. **Wardle, R. A.**—The problems of applied entomology. [Publ. Univ. Manchester] Biol. Ser. 5: 587 pp., ill.

ANATOMY, PHYSIOLOGY, ETC.—Bataillon & Su.—Etudes analytiques et expérimentales sur les rythmes cinétiques dans l'oeuf (Hyla arborea, Paracentrotus lividus, Bombyx mori). [Trav. Inst. Zool. Univ. Montpellier] 54:

439-540, ill. **de Boissezon, P.**—Influence de la température sur la biologie des Culicidés. [Bull. Soc. Zool. France] 55: 255-261. **Dautert-Willimzik, E.**—Einige beobachtungen über das geschlechtsleben der männchen der schlupfwespe Nasonia brevicornis. [34] 93: 306-316, ill. **Dawson, R. W.**—The problem of voltinism and dormancy in the Polyphemus moth (Telea polyphemus). [42] 59: 87-131. **Ehrhardt, S.**—Ueber arbeitsteilung bei Myrmica-und Messorarten. [46] 20: 755-812, ill. **Fischer, E.**—Ein elektrokardiogramm von schmetterlingspuppen. [41] 15: 46-49, ill. **Flanders, S. E.**—The life cycles of Trichogramma minutum in relation to temperature. [68] 73: 458. **Friederichs, H. F.**—Beiträge zur morphologie und physiologie der sehorgane der Cicindelinen. [46] 21: 1-172, ill. **Frisch, K.**—Versuche über den geschmacksinn der bienen. [Sitzungsb. Ges. Morph. u. Phys. München] 39: 49-60. **Heymons & Lengerken.**—Studien über die lebenserscheinungen der Silphini. [46] 20: 691-706, ill. **Hobson, R. P.**—Studies on the nutrition of blow-fly larvae. [42] 8: 109-123, ill. **Lutz, F. E.**—Light as a factor in controlling the start of daily activity of a wren and stingless bees. [40] 468: 9 pp. **Marcu, O.**—Ein neuer beitrag zur kenntnis der stridulationsorgane bei Ipiden. [34] 94: 32-37, ill. **McIndoo, N. E.**—Tropisms and sense organs of Coleoptera. [Smiths. Misc. Coll.] 82: 70 pp., ill. **Millot, J.**—Glandes venimeuses et glandes séricigènes chez les Sicariides. [Bull. Soc. Zool. France] 55: 150-175, ill. **Pauliuk, I.**—Topographie und funktion des kopulationsapparates von Lestes sponsa. [Verh. Mitt. Siebenbürg. Ver. Naturwiss. Hermannstadt] 78: 41-62, ill. **Salt, G.**—A further study of the effects of stylopization on wasps. [42] 59: 133-166, ill. **Stammer, H. J.**—Eine bakteriensymbiose bei den Donaciinen. (Coleoptera.) [88] 19: 270-271. **Vandendries, R.**—La conduite sexuelle des Hyménomycetes interprétee par les théories de Hartmann concernant la bisexualité et la relativité sexuelle. [Bull. Classe Sci., Belgique] 16: 1213-1234, ill. **Wigglesworth, V. B.**—The respiration of insects. [Biol. Rev. & Biol. Pro. Cambridge Philos. Soc.] 6: 181-220.

ARACHNIDA AND MYRIOPODA.—Gudger, E. W.—More spider hunters. Accounts of arachnids which attack and devour vertebrates other than fishes. [76] 1931: 422-433, ill.

THE SMALLER ORDERS OF INSECTS.—Bartenef, A.—Ueber die geographische verbreitung von Pantala flavescens (Libellulinae). [89] 60: 471-488, ill. **Heath, H.**—Experiments in termite caste development. [68] 73: 431. ***Hood, J. D.**—A new genus and species of Aeolothripidae (Thysanoptera) from Chile. [19] 26: 1-3, ill. **Hungerford,**

H. B.—Concerning the egg of Polystoechotes punctatus. [19] 26: 22-23, ill. **Morse, M.**—The external morphology of Chrysopa perla. (Chrysopidae). [6] 39: 1-42, ill. **Traver, J. R.**—The ephemerid genus Baetisca. [6] 39: 45-66, ill.

ORTHOPTERA.—*Hebard, M.—The Mogoplistinae of United States (Gryllidae). [1] 57: 135-160, ill. **Hood & Hincher.**—The giant katydid (Stilpnochlora couloniana) in Monroe County, New York. [19] 26: 20, ill.

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—PAUL VIGNON.

OBITUARY.

Professor JAMES STEWART HINE, Director of the Division of Natural History of the Ohio State Archaeological and Historical Museum, died December 22, 1930. His death was due to an acute heart attack and occurred in his home while he, his children and the neighbor children were making preparations for Christmas. Professor Hine had always enjoyed robust health. His taking away was without warning.

Professor Hine was born at Wauseon, Ohio, June 13, 1866, was raised on a farm and worked his way through Ohio State University, where he received the B. S. degree in 1893. From this time to his death his activities were centered on the University Campus, first on the faculty of Ohio State University, and in his later years at the Archaeological Museum. From 1894 to 1896 he was Instructor in Entomology, from 1896-1902, Assistant Professor of Zoology and Entomology, and from 1902 to 1925, Associate Professor of Entomolgy. In 1925 the Ohio State Archaeological Museum decided to develop a Division of Ohio Natural History which could cooperate with the state high schools and Professor Hine, because of his wide knowledge of the state fauna, was asked to organize the division. During 1925-1927 he devoted half his time to teaching and half to the organization of the Division of Natural History. From 1927 till his death, 1930, he devoted full time to the latter position.

In his earlier years of teaching Professor Hine handled at one time or another the various courses given in entomology, but in later years came more into the teaching of apiculture. He had received his biological education under David Kellicott when the field was almost wholly morphological and systematic. With this start his interests in research through life were almost wholly systematic.

His first extended collecting trip beyond the borders of Ohio was during June to September, 1903, when he worked at the Gulf Biologic Station of the University of Louisiana, at Cameron on the Gulf Coast. His study here, besides general collecting, was on horse flies and at least six subsequent papers were written on this work, the main ones being *A preliminary*

report on the horseflies of Louisiana, 1906, and *A second report on the horseflies of Louisiana,* 1907.

His second extensive collecting trip was taken during January to March, 1905, in Central America with E. B. Williamson, and C. C. Deam, where Hine collected Odonata and Diptera. The records of Odonata are given in the Supplement to the Neuroptera of the *Biologia Centrali Americana,* but his bibliography gives no papers on the Diptera of this trip.

The third trip was during July and August, 1907, to Southern California, the Huachucha Mountains of Arizona and to Northern Mexico. The Odonata of this trip are in the Williamson Collection. No special papers were written on the material.

From about this time on Hine had built up by collecting and trading such a large collection of Diptera, particularly Tabanidae and Asilidae that the majority of his subsequent papers were revisions of groups and papers on new species.

During the ten years from 1907 to 1917 Hine spent his vacations in the development of his apple farm at Ira, Ohio, a few miles from Akron. While regretting the loss of time for collecting trips he felt that getting his four children onto a farm each summer more than paid for his time lost from entomological work. Eventually the orchard became very profitable and as the city of Akron grew it became very valuable.

In 1917 Professor Hine went as entomologist and ornithologist on the first National Geographic Society expedition under the direction of Robert Griggs to the Katmai volcanic region of Alaska. Hine arrived at Kodiak Island June 8, 1917, collected there until June 14, when the expedition crossed to Katmai Bay, June 15th. He spent the greater part of his time collecting birds, small mammals and insects in the region within 15-20 miles of the base camp on Katmai Bay, but made trips into Katmai Valley and into the Valley of 10,000 Smokes. August 30 to September 20 was spent on Kodiak Island, when the expedition returned to the States.

In 1919 Professor Hine went as entomologist and ornithologist on the second National Geographic Society expedition to

the Katmai region. He arrived at the base camp at the head of Naknek Lake, June 21, and spent the most of the summer collecting in the vicinity of the base camp. During June 26-30 and July 6-10 trips were made by boat down Naknek Lake. Starting August 17, he made a trip over Katmai Range to Katmai Crater and back to Katmai Bay, Kodiak Island and Seattle, where he arrived September 26.*

The only papers specifically on these trips appear to be *The birds of the Katmai Region*, 1919, *Description of Alaskan Diptera of the Family Syrphidae*, 1922, and *Alaskan species of Diptera of the genus Helophilus*, 1923.

During the winter of 1922-23 Hine studied at the Zoological Museum of the University of Michigan with two or three weeks during this period at the U. S. National Museum.

In 1925 he made a trip with the writer to England during August and September for the purpose of studying types of Tabanidae, particularly those of Walker, in the British Museum. Except for a few short trips into the region about London his whole time was spent at the Museum studying tabanid types.

In 1923 Professor Hine made a trip to southern Florida and Cuba lasting from March to May 15. He made extensive collections of Diptera and Odonata.†

When Professor Hine shifted in 1925 from the Department of Zoology and Entomology of Ohio State University to the Directorship of the Division of Natural History in the Archaeological Museum, he found the type of work and the opportunity for which he proved to be especially fitted. His work here involved the building of collections of all types of animal life found in Ohio. He was given a staff of three assistants and worked at every opportunity through a group of enthusiastic amateur collectors, some of whom have already developed a broad knowledge of the Ohio fauna. Besides the extensive insect collections the Museum already has very complete collections of the birds, mammals, amphibians and fishes of Ohio.

* I wish to thank Dr. J. O. Sayre for the data from his field notes on the Alaskan trips.

† The latter have been found, while examining his collections since his death, to have been ruined by dermestids.

An excellent ornithological library has been assembled by purchase. For the first time in his life Hine showed his great ability to interest others in natural history to the extent of giving time and money to the building up of Ohio collections.

All during his life Professor Hine's interest, second to that in insects, was in birds. He was a charter member of the first Wheaton Club organized in 1896 and its record book shows that he gave the first formal paper on its first program, "The Order Pygopodes". After a few years this club became a social thing and eventually died. In 1921 a second Wheaton Club was organized. Hine was its president from 1921 to 1927. The latter took in permanent Columbus members as well as University students and has become a stable organization.

Through his teaching of apiculture he became interested in Ohio apicultural problems and was active for many years in the Ohio Beekeepers Association, being its president for several years.

To Professor Hine the real joy of life came in collecting in the field and in systematic work in his laboratory. He was an inveterate collector and brought together by field work and trading very fine collections of Tabanidae and Asilidae with much material on other large Diptera. He was equally a collector of books and, having purchased the C. H. T. Townsend library, built on it an excellent library on the systematics of Diptera.

His bibliography includes 92 titles which can be roughly divided as follows: Diptera, 52 titles, mostly descriptions and generic revision; Odonata 10; other groups of insects 23; mammals 2; birds 3; and on horticulture 2. At the time of his death he had completed all the basic work on a volume on the mammals of Ohio and on a monograph of the Tabanidae of North America.

Professor Hine had the gift of patience and a very great gift in his ability to interest others in birds and insects. He has left a lasting impression on faunal work in Ohio and on systematic work in Tabanidae and Asilidae.

—Clarence Hamilton Kennedy.

EXCHANGES

This column is intended only for wants and exchanges, not for advertisements of goods for sale. Notices not exceeding three lines free to subscribers.

These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and only when necessary those at the top (being longest in) are discontinued.

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